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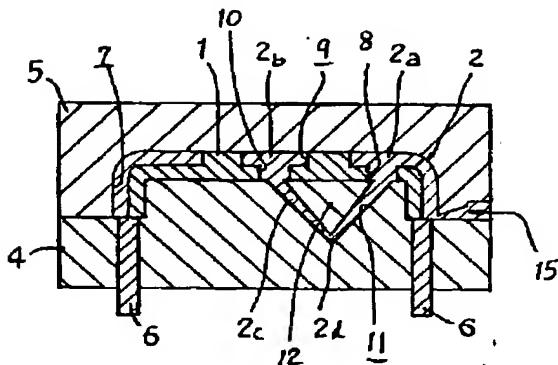
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(54)【発明の名称】 キートップの二色成形方法

(57)【要約】

【目的】 スライド機構を設ける必要がないため、金型の製作コストの節減が行えると共に、照光式のキートップとして使用した場合、文字や図形識別の明瞭性が良好であるキートップの二色成形方法を提供する。

【構成】 セカンドショットにおいて一方の金型5の成形用空間7に充填した二次成形樹脂2を、金型合わせ面から遠ざかる程間隔が減少した他方の金型4のV字形連絡部分成形用空間11へ第1流路8を通して充填し、さらに該成形用空間11から第2流路10を通して金型5の隔壁部分成形用空間9へ充填する。金型5、4を型開きする時、成形用空間11内のV字形連絡部分2cの先端部2dを該成形用空間11の金型合わせ面側のV字形内壁部12で押し切って開口部13を形成する。



1

## 【特許請求の範囲】

【請求項1】 ファーストショットで一次成形樹脂1の射出成形を行ない、セカンドショットで二次成形樹脂2の射出成形を行ない、二次成形樹脂成形部分2には本体部分2aから孤立し、一次成形樹脂成形部分1で包囲される隔離部分2bがあるキートップの二色成形方法であって、ファーストショットにおいて、二次成形樹脂成形部分2の本体部分2aが成形されるべき空間7の背面側にあたる一次成形樹脂成形部分1の適所に、背面側に開口した第1流路8を設けると共に、二次成形樹脂成形部分2の隔離部分2aが成形されるべき空間9の背面側にあたる一次成形樹脂成形部分1の適所に、背面側に開口した第2流路10を設け、第1流路形成用ピン17と第2流路形成用ピン18を金型3の方向から挿入して第1流路8と第2流路10をそれぞれ塞いだ状態で、一次成形樹脂成形部分の成形用空間16に一次成形樹脂1を充填し、セカンドショットにおいて、第1流路形成用ピン17と第2流路形成用ピン18を含む金型3を、二次成形樹脂成形部分の成形用空間7を形成した金型5と交換して第1流路8と第2流路10を開口し、一方の金型5の成形用空間7に充填した二次成形樹脂2を、金型合わせ面から遠ざかる程間隔が減少した他方の金型4のV字形連絡部分成形用空間11に第1流路8を通して充填すると共に、該成形用空間11から第2流路10を通して一方の金型5の隔離部分成形用空間9に二次成形樹脂2を充填し、セカンドショットの金型5を型開きした後、突出しピン6を上側に突き出して金型4から分離する時、前記成形用空間11内の二次成形樹脂のV字形連絡部分2cの先端部2dを該成形用空間11の金型合わせ面側のV字形内壁部12によって押し切り、開口部13を形成しながら、金型4から取り出すことを特徴とするキートップの二色成形方法。

## 【発明の詳細な説明】

## 【0001】

【産業上の利用分野】 本発明はカーラジオ、カーステレオ、ブッシュホンダイヤル等の各種入力に使用されるキートップ、および照光式のキートップの二色成形方法に関するものである。

## 【0002】

【従来の技術】 文字、図形の部分を着色された樹脂、あるいは光透過性樹脂で成形し、それ以外の部分を文字、図形の部分とは色の異なる樹脂、あるいは光遮蔽性樹脂で成形してキートップを成形するとき、例えば文字として”O”、”B”などを表すキートップでは、図6と図7に示したように、文字部分以外の成形部分22には、文字部の成形部分21の外側空間を埋める本体部分22aのほかに、閉曲線を描く文字部の成形部分21で包囲された隔離部分22bが存在することになる。

【0003】 従来の二色成形法では、ファーストショットの金型にスライド機構を設け、セカンドショットで隔

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離部分成形用空間に二次成形樹脂22を流し込むためにトンネルのような流路を形成している。この流路はファーストショットではスライドピン等によって封じられており、ファーストショット終了後にスライドさせて開口させる。この流路は二次成形樹脂22の本体部分22aから伸びて、文字、図形を表す樹脂成形部分の一部の背後を通過している。

【0004】 この流路を作るためのスライド機構の形状構造が複雑であるため、金型製作が容易でなく製作コストが高くなる。また、この流路内の二次成形樹脂部分22cは、一次成形樹脂として光透過性樹脂を使用し、二次成形樹脂として光遮蔽性樹脂を使用した照光式のキートップの場合、キートップの背後からの照光使用時に光透過性樹脂の一部に影となって表れるため、当該部分における文字、図形の明瞭性を低減させている。

## 【0005】

【発明が解決しようとする課題】 従って本発明の目的は、スライド機構を設ける必要がないため、金型の製作コストの節減が行えると共に、照光式のキートップとして使用した場合、光透過性樹脂成形部分の背後の光遮蔽性樹脂成形部分に開口部が作られるため容易に光が通過し、文字や図形識別の明瞭性が良好であるキートップを製作できる、キートップの二色成形方法を提供することである。

## 【0006】

【課題を解決するための手段】 以下、添付図面中の参照符号を用いて説明すると、本発明のキートップの二色成形方法は、ファーストショットで一次成形樹脂1の射出成形を行ない、セカンドショットで二次成形樹脂2の射出成形を行なうものであり、二次成形樹脂成形部分2には本体部分2aから孤立し、一次成形樹脂成形部分1で包囲される隔離部分2bがある。

【0007】 ファーストショットにおいて、二次成形樹脂成形部分2の本体部分2aが成形されるべき空間7の背面側にあたる一次成形樹脂成形部分1の適所に、背面側に開口した第1流路8を設けると共に、二次成形樹脂成形部分2の隔離部分2aが成形されるべき空間9の背面側にあたる一次成形樹脂成形部分1の適所に、背面側に開口した第2流路10を設け、各流路が一次成形樹脂によって塞がれることの無いように、第1流路形成用ピン17と第2流路形成用ピン18によって各流路を閉鎖し、一次成形樹脂を充填する。

【0008】 金型3及び第1流路形成用ピン17と第2流路形成用ピン18を取り外し、二次成形用空間7を形成した金型5と交換した後、セカンドショットにおいて、一方の金型5の成形用空間7に充填した二次成形樹脂2を、金型合わせ面から遠ざかる程間隔が減少した他方の金型6のV字形連絡部分成形用空間11に第1流路8を通して充填し、更に該V字形成形用空間11から第2流路10を通して一方の金型5の隔離部分成形用空間9に

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二次成形樹脂2を充填する。

【0009】セカンドショット終了後に金型5を型開きした後、突出しピン6を上側に突き出して金型4から分離する時、前記成形用空間11内の二次成形樹脂のV字形連絡部分2cの先端部2dを該成形用空間11の金型合わせ面側のV字形内壁部12によって押し切り、開口部13を形成する。

【0010】

【作用】文字、図形に隔離部分を有するキートップにおいて、あらかじめ金型4に形成されたV字形連絡部分を流路として隔離部分に充填されるため、特別なスライド機構を設けて流路を形成する必要が無い。また、V字形連絡部分は、金型から突き出されて分離する際には、V字形内壁部によって切断されるため、一次成形樹脂成形部分1の背後において、一次成形樹脂成形部分1の側面から突出する二次成形樹脂成形部分2は、開口部13の形成時に切り残されたV字形連絡部分2cの両側の傾斜壁部分だけであり、一次成形樹脂として光透過性樹脂を使用し、二次成形樹脂として光遮蔽性樹脂を使用したキートップの場合でも、この突出量は無視できる程度に押さえられているため、図示の矢印の方向から照射されたとき、連絡部分2cの影はできない。

【0011】

【実施例】図示の実施例では、ファーストショットにおいて、公知の射出ユニットからの一次成形樹脂1は、上側金型3の樹脂注入人口（トンネルゲート）14から上側金型3の文字部成形用空間16に充填される。

【0012】ファーストショットの金型3、4を型開きすると、キートップ半製品には上側金型3の第1流路形成用ピン17によって第1流路8が形成され、第2流路形成用ピン18によって第2流路10が形成されている。下側の金型4は、ファーストショットとセカンドショットの両方に使用される。

【0013】セカンドショットにおいて、公知の射出ユニットからの二次成形樹脂2は、下側金型6の樹脂注入口（サイドゲート）15から上側金型5の成形用空間7に充填される。この二次成形樹脂2は該成形用空間7から第1流路8を通して下側金型6の連絡部分成形用空間11に充填され、該成形用空間11から第2流路10を通して上側金型5の隔離部分成形用空間9に充填される。

【0014】このように文字の内側空間と外側空間を二次成形樹脂2で成形した後、セカンドショットの上側金型5を型開きし、下側金型4から突出しピン6を上側に突き出し、キートップを金型4から分離する。このとき、前記成形用空間11の金型合わせ面側のV字形内壁部12が切断手段として働き、成形用空間11内の二次成形樹脂の連絡部分2cの先端部2dを押し切る。そのため、連絡部分2cには開口部13が形成される。

【0015】

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【発明の効果】以上のように本発明では、セカンドショットにおいて一方の金型5の成形用空間7に充填した二次成形樹脂2を、金型合わせ面から遠ざかる程間隔が減少した他方の金型4のV字形連絡部分成形用空間11に第1流路8を通して充填し、該V字形成用空間11から第2流路10を通して一方の金型5の隔離部分成形用空間9に二次成形樹脂2を充填するため、流路を確保するためのスライド機構をファーストショットの金型3に設ける必要が無いので、金型の製作コストを低減させることができる。

【0016】また、セカンドショットの金型5、4を型開きする時、前記V字形連絡部分成形用空間11内のV字形連絡部分2cの先端部2dを該成形用空間11の金型合わせ面側のV字形内壁部12で押し切ることによつて開口部13を形成するので、一次成形樹脂として光透過性樹脂を使用し、二次成形樹脂として光遮蔽性樹脂を使用したキートップの場合でも、開口部13を通つて光が通過するため、文字や図形識別の明瞭性が良好であるキートップを製作することが出来る。

【図面の簡単な説明】

【図1】本発明方法の一実施例においてファーストショットが終了した状態における金型の縦断面図である。

【図2】前記実施例においてセカンドショットが終了した状態における金型の縦断面図である。

【図3】ファーストショットとセカンドショットに兼用される下側金型の半截斜視図である。

【図4】セカンドショットの金型から取り出されたキートップの縦断面図であり、照光式キートップの場合は矢印の方向から照光使用される。

【図5】該キートップの正面図である。

【図6】従来方法で成形されたキートップの縦断面図であり、照光式キートップの場合は矢印の方向から照光使用される。

【図7】図5に示したキートップの正面図である。

【符号の説明】

- 1 文字部用の一次成形樹脂成形部分
- 2 二次成形樹脂成形部分
- 2 a 二次成形樹脂成形部分の本体部分
- 2 b 二次成形樹脂成形部分の隔離部分
- 2 c 二次成形樹脂成形部分の連絡部分
- 2 d 連絡部分の先端部
- 3 ファーストショットの上側金型
- 4 ファーストショットとセカンドショットの下側金型
- 5 セカンドショットの上側金型
- 6 下側金型の突出しピン
- 7 二次成形樹脂成形部分の本体部分成形用空間
- 8 第1流路
- 9 二次成形樹脂成形部分の隔離部分成形用空間
- 10 第2流路
- 11 連絡部分成形用空間

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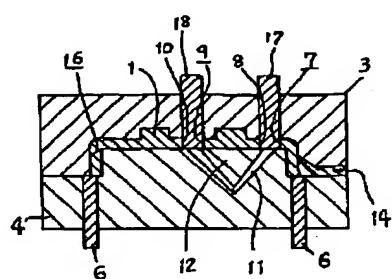
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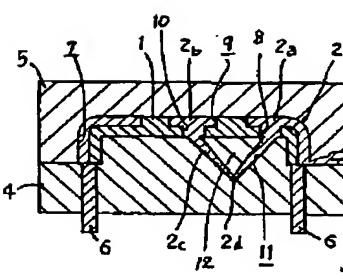
- 1 2 押し切り用内壁部  
 1 3 連絡部分の開口部  
 1 4 ファーストショットの樹脂注入口  
 1 5 セカンドショットの樹脂注入口

- 1 6 一次成形樹脂成形部分の成形用空間  
 1 7 第1流路形成用ピン  
 1 8 第2流路形成用ピン

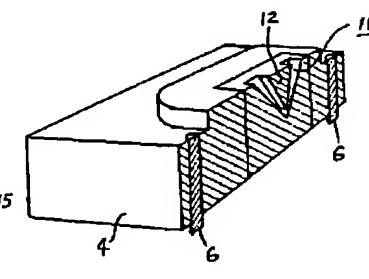
【図1】



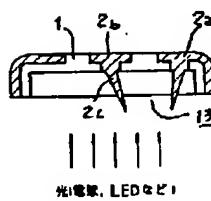
【図2】



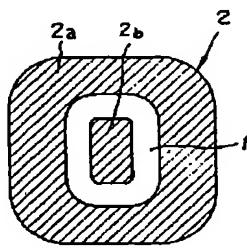
【図3】



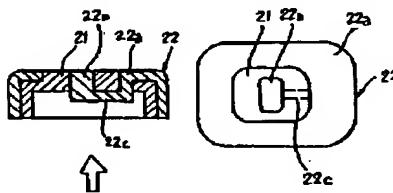
【図4】



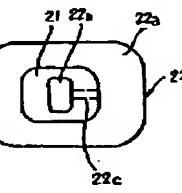
【図5】



【図6】



【図7】



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**CLAIMS****[Claim(s)]**

[Claim 1] Perform injection molding of the primary fabrication resin 1 at a first shot, and injection molding of the secondary-forming resin 2 is performed at a second shot. Into the secondary-forming resin fabrication portion 2, by this soma, are isolated from 2a, and are the two-color-molding method of a keytop with isolation partial 2b surrounded in the primary fabrication resin fabrication portion 1, and it sets at a first shot. While establishing the 1st passage 8 which carried out opening to the tooth-back side in the proper place of the primary fabrication resin fabrication portion 1 which hits the tooth-back side of the space 7 where this soma part 2a of the secondary-forming resin fabrication portion 2 should be fabricated In the proper place of the primary fabrication resin fabrication portion 1 which hits the tooth-back side of the space 9 where isolation partial 2a of the secondary-forming resin fabrication portion 2 should be fabricated Where it formed the 2nd passage 10 which carried out opening to the tooth-back side, it inserted the pin 17 for the 1st passage formation, and the pin 18 for the 2nd passage formation from the direction of metal mold 3 and the 1st passage 8 and the 2nd passage 10 are taken up, respectively Fill up the space 16 for fabrication of a primary fabrication resin fabrication portion with the primary fabrication resin 1, and it sets to a second shot. The metal mold 3 containing the pin 17 for the 1st passage formation, and the pin 18 for the 2nd passage formation Exchange for the metal mold 5 in which the space 7 for fabrication of a secondary-forming resin fabrication portion was formed, and opening of the 1st passage 8 and the 2nd passage 10 is carried out. While filling up the space 11 for V typeface Division for Interlibrary Services part fabrication of the metal mold 4 of another side where the interval decreased with the secondary-forming resin 2 with which the space 7 for fabrication of one metal mold 5 was filled up through the 1st passage 8 so that it keeps away from a golden die-matching side The space 9 for isolation partial fabrication of one metal mold 5 is filled up with the secondary-forming resin 2 through the 2nd passage 10 from this space 11 for fabrication. When projecting a knock-out pin 6 to the up side and dissociating from metal mold 4, after carrying out the mold aperture of the metal mold 5 of a second shot, The two-color-molding method of the keytop characterized by taking out from metal mold 4 while carrying 2d of points of V typeface Division for Interlibrary Services part 2c of the secondary-forming resin in the aforementioned space 11 for fabrication through by V typeface wall section 12 by the side of the golden die-matching side of this space 11 for fabrication and forming opening 13.

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## DETAILED DESCRIPTION

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### [Detailed Description of the Invention]

#### [0001]

[Industrial Application] this invention relates to the two-color-molding method of the keytop used for various inputs, such as a car radio, a car stereo, and a push-button phone dial, and the keytop of an illumination formula.

#### [0002]

[Description of the Prior Art] When fabricating the portions of a character and a figure by the colored resin or the light-transmission nature resin, fabricating the other portion by the character, the resin with which a color differs from the portion of a figure, or the optical cover nature resin and fabricating a keytop, for example, in the keytop which expresses "O", "B", etc. as a character As shown in drawing 6 and drawing 7, isolation partial 22b surrounded in the forming portion 21 of the character section describing the closed contour other than this soma part 22a which fills the outside space of the forming portion 21 of the character section will exist in forming portions 22 other than a character portion.

[0003] By the conventional two-color-molding method, a sliding mechanism is formed in the metal mold of a first shot, and in order to slush the secondary-forming resin 22 into the space for isolation partial fabrication at a second shot, passage like a tunnel is formed. At a first shot, this passage is stopped by the slide pin etc., is made to slide after a first shot end, and carries out opening. This passage was extended from this soma part 22a of the secondary-forming resin 22, and has passed through some backs of the resin fabrication portion showing a character and a figure.

[0004] Since the configuration structure of the sliding mechanism for making this passage is complicated, golden die making is not easy and manufacture cost becomes high. Moreover, since in the case of the keytop of the illumination formula which used the light-transmission nature resin as a primary fabrication resin, and used the optical cover nature resin as a secondary-forming resin secondary-forming resin partial 22c in this passage becomes a shadow and appears in some light-transmission nature resins at the time of the illumination use from behind a keytop, it is reducing the legibility of the character in the portion concerned, and a figure.

#### [0005]

[Problem(s) to be Solved by the Invention] Therefore, since the purpose of this invention did not need to form a sliding mechanism, while it could reduce manufacture cost of metal mold, when it is used as a keytop of an illumination formula, it is offering the two-color-molding method of a keytop light's passing easily since opening's is made by the optical cover nature resin fabrication portion of a light-transmission nature resin fabrication portion in back, and a character and the legibility of figure discernment being able to manufacture a good keytop.

#### [0006]

[Means for Solving the Problem] Hereafter, when it explains using the reference mark in an accompanying drawing, the two-color-molding method of the keytop of this invention performs injection molding of the primary fabrication resin 1 at a first shot, performs injection molding of the secondary-forming resin 2 at a second shot, is isolated from this soma part 2a into the secondary-forming resin fabrication portion 2, and has isolation partial 2b surrounded in the primary fabrication resin fabrication portion 1.

[0007] While establishing the 1st passage 8 which carried out opening to the tooth-back side in the proper place of the primary fabrication resin fabrication portion 1 which hits the tooth-back side of the space 7 where this soma part 2a of the secondary-forming resin fabrication portion 2 should be fabricated in a first shot So that the 2nd passage 10 which carried out opening to the tooth-back side may be established in the proper place of the primary fabrication resin fabrication portion 1 which hits the tooth-back side of the space 9 where isolation partial 2a of the secondary-forming resin fabrication portion 2 should be fabricated and each passage may not be closed by the primary fabrication resin By the pin 17 for the 1st passage formation, and the pin 18 for the 2nd passage formation, each passage is closed and it is filled up with a primary fabrication resin.

[0008] In the second shot after exchanging for the metal mold 5 which demounted the pin 17 for 1 passage formation, and the pin 18 for the 2nd passage formation, and formed the space 7 for secondary forming the [ metal mold 3 and ] — The space 11 for V typeface Division for Interlibrary Services part fabrication of the metal mold 6 of another side where the interval decreased, so that it kept away from the golden die-matching side is filled up with the secondary-forming resin 2 with which the space 7 for fabrication of one metal mold 5 was filled up through the 1st passage 8. Furthermore, the space 9 for isolation partial fabrication of one metal mold 5 is filled up with the secondary-forming resin 2 through the 2nd passage 10 from this space 11 for V character formation types.

[0009] When projecting a knock-out pin 6 to the up side and dissociating from metal mold 4 after carrying out the mold aperture of the metal mold 5 after a second shot end, 2d of points of V typeface Division for Interlibrary Services part 2c of the secondary-forming resin in the aforementioned space 11 for fabrication is carried through by V typeface wall section 12 by the side of the golden die-matching side of this space 11 for fabrication, and opening 13 is formed.

#### [0010]

[Function] Since an isolation portion is filled up by making into passage a part for V typeface Division for Interlibrary Services beforehand formed in the character and the figure in the keytop which has an isolation portion at metal mold 4, there is no need of

forming a special sliding mechanism and forming passage. moreover, in case it projects from metal mold and dissociates, a part for V typeface Division for Interlibrary Services Since it is cut by V typeface wall section, in the back of the primary fabrication resin fabrication portion 1, the secondary-forming resin fabrication portion 2 which projects from the side of the primary fabrication resin fabrication portion 1 It is only a part for the inclination wall of the both sides of V typeface Division for Interlibrary Services part 2c cut off partially at the time of formation of opening 13. Since this amount of protrusions is pressed down by the grade which can be disregarded also by the case of the keytop which used the light-transmission nature resin as a primary fabrication resin, and used the optical cover nature resin as a secondary-forming resin, when it irradiates from the direction of the arrow of illustration, the shadow of Division for Interlibrary Services part 2c is not made.

[0011]

[Example] the example of illustration — a first shot — setting — the primary fabrication resin 1 from a well-known injection unit — a top — the top from the resin inlet (tunnel gate) 14 of metal mold 3 — the space 16 for character section fabrication of metal mold 3 is filled up

[0012] if the mold aperture of the metal mold 3 and 4 of a first shot is carried out — keytop half-finished products — a top — the 1st passage 8 is formed by the pin 17 for the 1st passage formation of metal mold 3, and the 2nd passage 10 is formed by the pin 18 for the 2nd passage formation The lower metal mold 4 is used for both a first shot and a second shot.

[0013] a second shot — setting — the secondary-forming resin 2 from a well-known injection unit — the bottom — the top from the resin inlet (side gate) 15 of metal mold 6 — the space 7 for fabrication of metal mold 5 is filled up this secondary-forming resin 2 — this space 7 for fabrication to the 1st passage 8 — letting it pass — the bottom — the space 11 for the Division for Interlibrary Services part fabrication of metal mold 6 is filled up — having — this space 11 for fabrication to the 2nd passage 10 — letting it pass — a top — the space 9 for isolation partial fabrication of metal mold 5 is filled up

[0014] thus, the second shot top after fabricating the inside space and outside space of a character by the secondary-forming resin 2 — metal mold 5 — a mold aperture — carrying out — the bottom — a knock-out pin 6 is projected from metal mold 4 to the up side, and a keytop is separated from metal mold 4 At this time, V typeface wall section 12 by the side of the golden die-matching side of the aforementioned space 11 for fabrication works as a cutting means, and carries 2d of points of Division for Interlibrary Services part 2c of the secondary-forming resin in the space 11 for fabrication through. Therefore, opening 13 is formed in Division for Interlibrary Services part 2c.

[0015]

[Effect of the Invention] The secondary-forming resin 2 filled up with this invention into the space 7 for fabrication of one metal mold 5 in the second shot as mentioned above The space 11 for V typeface Division for Interlibrary Services part fabrication of the metal mold 4 of another side where the interval decreased, so that it kept away from the golden die-matching side is filled up through the 1st passage 8. Since there is no need of forming the sliding mechanism for securing passage in the metal mold 3 of a first shot in order to fill up the space 9 for isolation partial fabrication of one metal mold 5 with the secondary-forming resin 2 through the 2nd passage 10 from this space 11 for V character formation types, the manufacture cost of metal mold can be reduced.

[0016] Moreover, since opening 13 is formed by carrying 2d of points of V typeface Division for Interlibrary Services part 2c in the aforementioned space 11 for V typeface Division for Interlibrary Services part fabrication through in V typeface wall section 12 by the side of the golden die-matching side of this space 11 for fabrication when carrying out the mold aperture of the metal mold 5 and 4 of a second shot Since light passes through opening 13 also by the case of the keytop which used the light-transmission nature resin as a primary fabrication resin, and used the optical cover nature resin as a secondary-forming resin, a character and the legibility of figure discernment can manufacture a good keytop.

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TECHNICAL FIELD

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[Industrial Application] this invention relates to the two-color-molding method of the keytop used for various inputs, such as a car radio, a car stereo, and a push-button phone dial, and the keytop of an illumination formula.

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PRIOR ART

[Description of the Prior Art] When fabricating the portions of a character and a figure by the colored resin or the light-transmission nature resin, fabricating the other portion by the character, the resin with which a color differs from the portion of a figure, or the optical cover nature resin and fabricating a keytop, for example, in the keytop which expresses "O", "B", etc. as a character As shown in drawing 6 and drawing 7, isolation partial 22b surrounded in the forming portion 21 of the character section describing the closed contour other than this soma part 22a which fills the outside space of the forming portion 21 of the character section will exist in forming portions 22 other than a character portion.

[0003] By the conventional two-color-molding method, a sliding mechanism is formed in the metal mold of a first shot, and in order to slush the secondary-forming resin 22 into the space for isolation partial fabrication at a second shot, passage like a tunnel is formed. At a first shot, this passage is stopped by the slide pin etc., is made to slide after a first shot end, and carries out opening. This passage was extended from this soma part 22a of the secondary-forming resin 22, and has passed through some backs of the resin fabrication portion showing a character and a figure.

[0004] Since the configuration structure of the sliding mechanism for making this passage is complicated, golden die making is not easy and manufacture cost becomes high. Moreover, since in the case of the keytop of the illumination formula which used the light-transmission nature resin as a primary fabrication resin, and used the optical cover nature resin as a secondary-forming resin secondary-forming resin partial 22c in this passage becomes a shadow and appears in some light-transmission nature resins at the time of the illumination use from behind a keytop, it is reducing the legibility of the character in the portion concerned, and a figure.

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EFFECT OF THE INVENTION

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[Effect of the Invention] The secondary-forming resin 2 filled up with this invention into the space 7 for fabrication of one metal mold 5 in the second shot as mentioned above. In order to fill up the space 11 for V typeface Division for Interlibrary Services part fabrication of the metal mold 4 of another side where the interval decreased through the 1st passage 8 and to fill up the space 9 for isolation partial fabrication of one metal mold 5 with the secondary-forming resin 2 through the 2nd passage 10 from this space 11 for V character formation types so that it keeps away from a golden die-matching side. Since there is no need of forming the sliding mechanism for securing passage in the metal mold 3 of a first shot, the manufacture cost of metal mold can be reduced.

[0016] Moreover, the thing for which 2d of points of V typeface Division for Interlibrary Services part 2c in the aforementioned space 11 for V typeface Division for Interlibrary Services part fabrication is carried through in V typeface wall section 12 by the side of the golden die-matching side of this space 11 for fabrication when carrying out the mold aperture of the metal mold 5 and 4 of a second shot. Since opening 13 is formed and light passes through opening 13 also by the case of the keytop which used the light-transmission nature resin as a primary fabrication resin, and used the optical cover nature resin as a secondary-forming resin, a character and the legibility of figure discernment can manufacture a good keytop.

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TECHNICAL PROBLEM

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[Problem(s) to be Solved by the Invention] Therefore, since the purpose of this invention did not need to form a sliding mechanism, while it could reduce manufacture cost of metal mold, when it is used as a keytop of an illumination formula, it is offering the two-color-molding method of a keytop light's passing easily since opening's is made by the optical cover nature resin fabrication portion of a light-transmission nature resin fabrication portion in back, and a character and the legibility of figure discernment being able to manufacture a good keytop.

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MEANS

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[Means for Solving the Problem] Hereafter, when it explains using the reference mark in an accompanying drawing, the two-color-molding method of the keytop of this invention performs injection molding of the primary fabrication resin 1 at a first shot, performs injection molding of the secondary-forming resin 2 at a second shot, is isolated from this soma part 2a into the secondary-forming resin fabrication portion 2, and has isolation partial 2b surrounded in the primary fabrication resin fabrication portion 1.

[0007] While establishing the 1st passage 8 which carried out opening to the tooth-back side in the proper place of the primary fabrication resin fabrication portion 1 which hits the tooth-back side of the space 7 where this soma part 2a of the secondary-forming resin fabrication portion 2 should be fabricated in a first shot. So that the 2nd passage 10 which carried out opening to the tooth-back side may be established in the proper place of the primary fabrication resin fabrication portion 1 which hits the tooth-back side of the space 9 where isolation partial 2a of the secondary-forming resin fabrication portion 2 should be fabricated and each passage may not be closed by the primary fabrication resin. By the pin 17 for the 1st passage formation, and the pin 18 for the 2nd passage formation, each passage is closed and it is filled up with a primary fabrication resin.

[0008] In the second shot after exchanging for the metal mold 5 which demounted the pin 17 for 1 passage formation, and the pin 18 for the 2nd passage formation, and formed the space 7 for secondary forming the [ metal mold 3 and ] — The space 11 for V typeface Division for Interlibrary Services part fabrication of the metal mold 6 of another side where the interval decreased, so that it kept away from the golden die-matching side is filled up with the secondary-forming resin 2 with which the space 7 for fabrication of one metal mold 5 was filled up through the 1st passage 8. Furthermore, the space 9 for isolation partial fabrication of one metal mold 5 is filled up with the secondary-forming resin 2 through the 2nd passage 10 from this space 11 for V character formation types.

[0009] When projecting a knock-out pin 6 to the up side and dissociating from metal mold 4 after carrying out the mold aperture of the metal mold 5 after a second shot end, 2d of points of V typeface Division for Interlibrary Services part 2c of the secondary-forming resin in the aforementioned space 11 for fabrication is carried through by V typeface wall section 12 by the side of the golden die-matching side of this space 11 for fabrication, and opening 13 is formed.

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**OPERATION**

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[Function] Since an isolation portion is filled up by making into passage a part for V typeface Division for Interlibrary Services beforehand formed in the character and the figure in the keytop which has an isolation portion at metal mold 4, there is no need of forming a special sliding mechanism and forming passage. Moreover, a part for V typeface Division for Interlibrary Services is, in case it projects from metal mold and dissociates. Since it is cut by V typeface wall section, in the back of the primary fabrication resin fabrication portion 1, the secondary-forming resin fabrication portion 2 which projects from the side of the primary fabrication resin fabrication portion 1 It is only a part for the inclination wall of the both sides of V typeface Division for Interlibrary Services part 2c cut off partially at the time of formation of opening 13. Since this amount of projection is pressed down by the grade which can be disregarded also by the case of the keytop which used the light-transmission nature resin as a primary fabrication resin, and used the optical cover nature resin as a secondary-forming resin, when it irradiates from the direction of the arrow of illustration, the shadow of Division for Interlibrary Services part 2c is not made.

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EXAMPLE

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[Example] the example of illustration — a first shot — setting — the primary fabrication resin 1 from a well-known injection unit — a top — the top from the resin inlet (tunnel gate) 14 of metal mold 3 — the space 16 for character section fabrication of metal mold 3 is filled up

[0012] if the mold aperture of the metal mold 3 and 4 of a first shot is carried out — keytop half-finished products — a top — the 1st passage 8 is formed by the pin 17 for the 1st passage formation of metal mold 3, and the 2nd passage 10 is formed by the pin 18 for the 2nd passage formation. The lower metal mold 4 is used for both a first shot and a second shot.

[0013] a second shot — setting — the secondary-forming resin 2 from a well-known injection unit — the bottom — the top from the resin inlet (side gate) 15 of metal mold 6 — the space 7 for fabrication of metal mold 5 is filled up this secondary-forming resin 2 — this space 7 for fabrication to the 1st passage 8 — letting it pass — the bottom — the space 11 for the Division for Interlibrary Services part fabrication of metal mold 6 is filled up — having — this space 11 for fabrication to the 2nd passage 10 — letting it pass — a top — the space 9 for isolation partial fabrication of metal mold 5 is filled up

[0014] thus, the second shot top after fabricating the inside space and outside space of a character by the secondary-forming resin 2 — metal mold 5 — a mold aperture — carrying out — the bottom — a knock-out pin 6 is projected from metal mold 4 to the up side, and a keytop is separated from metal mold 4. At this time, V typeface wall section 12 by the side of the golden die-matching side of the aforementioned space 11 for fabrication works as a cutting means, and carries 2d of points of Division for Interlibrary Services part 2c of the secondary-forming resin in the space 11 for fabrication through. Therefore, opening 13 is formed in Division for Interlibrary Services part 2c.

[0015]

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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is drawing of longitudinal section of the metal mold in the state where the first shot was ended in one example of this invention method.

[Drawing 2] It is drawing of longitudinal section of the metal mold in the state where the second shot was ended in the aforementioned example.

[Drawing 3] the bottom used also [ shot / second / a first shot and ] — it is the cutting-into-half perspective diagram of metal mold

[Drawing 4] It is drawing of longitudinal section of a keytop picked out from the metal mold of a second shot, and illumination use of the case of an illumination formula keytop is carried out from the direction of an arrow.

[Drawing 5] It is the front view of this keytop.

[Drawing 6] It is drawing of longitudinal section of a keytop fabricated by the conventional method, and illumination use of the case of an illumination formula keytop is carried out from the direction of an arrow.

[Drawing 7] It is the front view of a keytop shown in drawing 5.

[Description of Notations]

1 Primary Fabrication Resin Fabrication Portion for Character Sections

2 Secondary-Forming Resin Fabrication Portion

2a A part for this soma of a secondary-forming resin fabrication portion

2b The isolation portion of a secondary-forming resin fabrication portion

2c A part for the Division for Interlibrary Services of a secondary-forming resin fabrication portion

2d The point for the Division for Interlibrary Services

3 First Shot Top — Metal Mold

4 First Shot and Second Shot Bottom — Metal Mold

5 Second Shot Top — Metal Mold

6 Bottom — Knock-out Pin of Metal Mold

7 Space for this Soma Part Fabrication of Secondary-Forming Resin Fabrication Portion

8 1st Passage

9 Space for Isolation Partial Fabrication of Secondary-Forming Resin Fabrication Portion

10 2nd Passage

11 Space for Division for Interlibrary Services Part Fabrication

12 Wall Section for Pushing Out

13 Opening for Division for Interlibrary Services

14 Resin Inlet of First Shot

15 Resin Inlet of Second Shot

16 Space for Fabrication of Primary Fabrication Resin Fabrication Portion

17 Pin for 1st Passage Formation

18 Pin for 2nd Passage Formation

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[Translation done.]